

# Interview Summary

Application No.  
08/898,736

Applicant(s)  
Coppens et al

Examiner  
Curtis E. Sherrer

Group Art Unit  
1761

All participants (applicant, applicant's representative, PTO personnel):

(1) Curtis E. Sherrer

(3) \_\_\_\_\_

(2) Timothy E. Levstik

(4) \_\_\_\_\_

Date of Interview Jun 23, 1999

Type: ☐ Telephonic ☒ Personal (copy is given to ☐ applicant ☒ applicant's representative).

Exhibit shown or demonstration conducted: ☐ Yes ☒ No. If yes, brief description:

Agreement ☐ was reached. ☒ was not reached.

Claim(s) discussed: All claims contained in Amendment A and Draft Amendment B

Identification of prior art discussed:

Gyllang et al

Description of the general nature of what was agreed to if an agreement was reached, or any other comments:

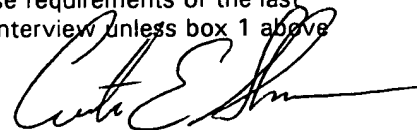
Applicants will consider submitting the claims found in draft Amendment B and the Draft declaration of Coppens. It is suggested that the declaration include more experimental detail. From the information disclosed in the Coppens declaration it appears that Gyllang et al is distinguished from the claimed invention. Applicants will consider submitting additional arguments directed to the nonobviousness of the claimed invention with respect to the teachings of Gyllang et al. At present it appears that the claims embody patentable subject matter.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

1. ☐ It is not necessary for applicant to provide a separate record of the substance of the interview.

Unless the paragraph above has been checked to indicate to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a response to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW.

2. ☐ Since the Examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action. Applicant is not relieved from providing a separate record of the interview unless box 1 above is also checked.



CURTIS E. SHERRER  
PATENT EXAMINER  
ART UNIT 1761

Examiner Note: You must sign and stamp this form unless it is an attachment to a signed Office action.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Coppens et al.

Serial No.: 08/898,736

Filed: July 23, 1997

Title: PROCESS FOR THE PREPARATION  
OF MALTED CEREALS

Group Art Unit: 1761

Examiner: C. Sherrer

CERTIFICATE OF MAILING

I hereby certify that this  
paper is being deposited with the  
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June 18, 1999

Date Registration No. 30,132  
Attorney for Applicants

AMENDMENT A

Honorable Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Dear Sir:

In response to the office action mailed December 18,  
1998, please amend the application as follows.

IN THE CLAIMS

Please cancel claims 10 through 12, 25, 26 and 37  
through 42.

Please amend the following claims.

1. (Once Amended) A process for the preparation of  
a malted cereal comprising: [the step of] introducing [an]  
activated [spore] spores to a cereal before or during a  
malting process.

2. (Once Amended) The process according to Claim  
1, wherein said activated [spore] spores increase[s] an  
activity of an enzyme that is present in a cereal used during  
said malting process.

4. (Once Amended) A process for the preparation of

a malted cereal as recited in claim 2 wherein the cereal, water and activated spores are combined to form a combination and where the concentration of the activated spores and the combination is held together for a time and temperature which are effective for providing the malted cereal with an enzyme activity which is greater than the enzyme activity which is obtained by a [matter] malting process without activated spores.

7. (Once Amended) A process as recited in claim 6 wherein prior to drying, the combination is held until the cereal has a moisture content of between about 20 to about 60 weight percent and the cereal has germinated for about 2 to about 7 days at a temperature of from about 10 to about 30°C.

8. (Once Amended) A process as recited in claim 6 wherein prior to drying, the combination is held until the cereal has a moisture content of between about 20 to about 60 weight percent and the cereal has germinated for about 2 to about 7 days at a temperature of from about 10 to about 30°C. and thereafter is dried to a moisture content of from about 2 to about 15 weight percent.

27. (Once Amended) A process for the preparation of malted cereal[s] comprising: [, wherein the] steeping the cereal, the steeping including [step includes] one or more wetting stages at a temperature between about 5° to [and] about 30°C, [preferably between 10° and 20°C, until the] the wetting stages effective for providing a material [has] having a moisture content between about 20% and about 60% by weight; [, preferably between 38% and 47%, wherein after a germination period between] germinating the cereal for about 2 to [and] about 7 days[, preferably between 3 to 6 days] at a temperature between about 10° to [and] about 30°C, [preferably between 14° and 18°C,] to provide a germinated cereal; adding activated spores from microbes selected from the group consisting of bacteria, fungi, and mixtures thereof

to the cereal prior to or during the steeping or the germinating of the cereal;

drying the steeped and germinated cereal[s] at a [are preferably kilned by increasing the temperature to values between] temperature of from about 40° to [and] about 150°C until the steeped and germinated cereal [material] has a moisture content between about 2% to [and] about 15% by weight[, and wherein one or more microbial cultures selected from the group consisting of one or more bacteria and/or one of more fungi are added in one or more times either before or during or after the malting process of said cereals].

29. (Once Amended) The process according to claim 27, for the preparation of malted barley wherein the fungi are selected from the group consisting of [(genera as described by Ainsworth and Bisby's dictionary of the fungi, 8th edition, 1995, edited by D.L. Hawksworth, P.M. Kirk, B.C. Sutton, and D.N. Pegler (632 pp) Cab International) comprising] Ascomycota, [preferentially] Dothideales, [preferentially] Mycosphaerellaceae, [preferentially] Mycosphaerella spp., Venturiaceae, [preferentially] Venturia spp.; Eurotiales, [preferentially] Monascaceae, [preferentially] Monascus spp., Trichocomaceae, [preferentially] Emericella spp., Duroteum spp., Eupenicillium spp., Neosartorya spp., Talaromyces spp., [;] Hypocreales, [preferentially] Hypocreaceae, [preferentially] Hypocrea spp., [;] Saccharomycetales, [preferentially] Dipodascaceae, [preferentially] Dipodascus spp., Galactomyces spp., Endomycetaceae, [preferentially] Endomyces spp., Metschnikowiaceae, [preferentially] Guilliermondella spp., Saccharomycetaceae [preferentially] Debaryomyces spp., Dekkera spp., Pichia spp., Kluyveromyces spp., Saccharomyces spp., Torulaspora spp., Zygosaccharomyces spp., Saccharomycodaceae, [preferentially] Hanseniaspora spp., [;] Schizosaccharomycetales, [preferentially] Schizosaccharomycetaceae, [preferentially] Schizosaccharomyces spp., [;] Sordariales, [preferentially] Chaetomiaceae, [preferentially] Chaetomium spp., Sordariaceae, [preferentially] Neurospora spp., [;] Zygomycota,

[preferentially] Mucorales, [preferentially] Mucoraceae,  
 [preferentially] Absidia spp., Amylomyces spp., Rhizomucor  
 spp., Actinomucor spp., Thermomucor spp., Chlamydomucor spp.,  
 Mucor spp., [preferentially] Mucor circinelloides, Mucor  
 grisecyanus, Mucor hiemalis, Mucor Indicus, Mucor mucedo,  
 Mucor piriformis, Mucor plumbeus, Mucor praini, Mucor  
 pusillus, Mucor silvaticus, Mucor javanicus, Mucor racemosus,  
 Mucor rouxianus, Mucor rouxii, Mucor aromatiacus, Mucor  
 flavus, Mucor miehe, Rhizopus spp., [preferentially] Rhizopus  
 arrhizus, Rhizopus oligosporus, Rhizopus oryzae,  
 [preferentially] strains ATCC 4858, ATCC 9363, NRRL 1891, NRRL  
 1472, Rhizopus stolonifer, Rhizopus thailandensis, Rhizopus  
 formosaensis, Rhizopus chinensis, Rhizopus cohnii, Rhizopus  
 japonicus, Rhizopus nodosus, Rhizopus delemar, Rhizopus  
 acetorinus, Rhizopus chlamydosporus, Rhizopus circinans,  
 Rhizopus javanicus, Rhizopus peka, Rhizopus salto, Rhizopus  
 tritici, Rhizopus niveus, Rhizopus microsporus, [;] Mitosporic  
 fungi preferentially Aureobasidium spp., Acremonium spp.,  
 Cercospora spp., Epicoccum spp., Monilia spp.,  
 [preferentially] Monilia candida, Monilia sitophila,  
 Mycoderma spp., Candida spp., [preferentially] Candida  
 diddensiae, Candida edax, Candida etchellii, Candida kefir,  
 Candida krusei, Candida lactosa, Candida lambica, Candida  
 mellinii, Candida utilis, Candida milleri, Candida mycoderma,  
 Candida parapsilosis, Candida obtusa, Candida tropicalis,  
 Candida valida, Candida versatilis, Candida guilliermondii,  
 Rhodotorula spp., Torulopsis spp., Geotrichum spp.,  
 [preferentially] Geotrichum amycelium, Geotrichum armillariae,  
 Geotrichum asteroides, Geotrichum bipunctatum, Geotrichum  
 dulcetum, Geotrichum erianse, Geotrichum fici, Geotrichum  
 flavo-brunneum, Geotrichum fragrans, Geotrichum gracile,  
 Geotrichum heritum, Geotrichum kiebakhii, Geotrichum  
 penicillatum, Geotrichum hirtum, Geotrichum pseudocandidum,  
 Geotrichum rectangulatum, Geotrichum suaveolens, Geotrichum  
 vanrylae, Geotrichum loubieri, Geotrichum microsporum,  
 Cladosporium spp., Trichoderma spp., [preferentially]  
 Trichoderma hamatum, Trichoderma harzianum, Trichoderma  
 koningii, Trichoderma pseudokoningii, Trichoderma reesei,

Trichoderma virgatum, Trichoderma viride, Oidium spp., Alternaria spp.\_ [preferentially] Alternaria alternata, Alternaria tenuis, Helminthosporium spp.\_ [preferentially] Helminthosporium gramineum, Helminthosporium sativum, Helminthosporium teres, Aspergillus spp.\_ [as described by R.A. Samson ((1994) in Biotechnological handbooks, Volume 7:Aspergillus, edited by Smith, J.E. (273 pp), Plenum Press) preferentially] Aspergillus ochraceus Group [(Thom & Church)], Aspergillus nidulans Group [(Thom & Church)], Aspergillus versicolor Group [(Thom & Church)], Aspergillus wentii Group [(Thom & Raper)], Aspergillus candidus Group [(Thom & Raper)], Aspergillus flavus Group [(Raper & Fennell)], Aspergillus niger Group [(Thom & Church)], Penicillium spp.\_ [preferentially] Penicillium aculeatum, Penicillium citrinum, Penicillium claviforme, Penicillium funiculosum, Penicillium italicum, Penicillium lanoso-viride, Penicillium emersonii, Penicillium lilacinum, and Penicillium expansum.

31. (Once Amended) A [P]rocess according to claim 27 for the preparation of malted cereals other than malted barley wherein the fungi are selected from the group consisting of [comprising] Ascomycota\_ [preferentially] Dothideales\_ [preferentially] Mycosphaerellaceae\_ [preferentially] Mycosphaerella spp., Venturiaceae\_ [preferentially] Venturia spp.\_[;] Eurotiales\_ [preferentially] Monascaceae\_ [preferentially] Monascus spp., Trichocomaceae\_ [preferentially] Emercilla spp., Euroteum spp., Eupencillium spp., Neosartorya spp., Talaromyces spp.\_[;] Hypocreales\_ [preferentially] Hypocreaceae\_ [preferentially] Hypocrea spp.\_[;] Saccharomycetales\_ [preferentially] Dipodascaceae\_ [preferentially] Dipodascus spp., Galactomyces spp., Endomycetaceae\_ [preferentially] Endomyces spp., Metschnikowiaceae\_ [preferentially] Guilliermondella spp., Saccharomycetaceae\_ [preferentially] Debaryomyces spp., Dekkera spp., Pichia spp., Klyveromyces spp., Sacchaaromyces spp., Torulaspora spp., Zygosaccharomyces spp., Sacchaaromycodaceae\_ [preferentially] Hanseniaspora spp.\_[;] Schizosaccharomycetales\_ [preferentially]

Schizosaccharomycetaceae, [preferentially] Schizosaccharomyces spp., [;] Sordariales, [preferentially] Chaetomiaceae, [preferentially] Chaetomium spp., Sordariaceae, [preferentially] Neurospora spp., Zygomycota, [preferentially] Mucorales, [preferentially] Mucoraceae, [preferentially] Absidia spp., Amylomyces spp., Rhizomucor spp., Actinomucor spp., Thermomucor spp., Chlamydomucor spp., Mucor spp., Rhizopus spp., [;] Mitosporic fungi, [preferentially] Aureobasidium spp., Acremonium spp., Cerocospora spp., Epicoccum spp., Monilla spp., Mycoderma spp., Candida spp., Rhodotorula spp., Torulopsis spp., Geotrichum spp., Cladosporium spp., Trichoderma spp., Oidium spp., Alternaria spp., Helminthosporium spp., Aspergillus spp., and Penicillium spp.

Submerged 32. (Once Amended) A [P]rocess according to [any of] claim[s] 27, 28, 29, 30 or [to] 31, wherein the cereal is submersed in water and a [the] total time of submersion in the water during steeping [for physiological reasons] does not exceed about 30 hours, [preferentially takes 10 to 25 hours, or] and wherein the drying [kilning includes] is at more than two temperatures [steps] and wherein the activated spores [microbial culture] are from microbes selected from the group consisting of [comprises] Rhizopus spp., [and/or] Pseudomonas spp. and mixtures thereof.

33. (Once Amended) A [P]rocess according to the claim 32, wherein the Rhizopus spp. is [preferably a] Rhizopus oryzae [such as a Rhizopus oryzae strain ATCC 9363].

34. (Once Amended) A [P]rocess according to [the] claim 31 [or claim 32], wherein the Pseudomonas sp. is [preferably a] Pseudomonas herbicola.

35. (Once Amended) A [P]rocess according to [any of] claim[s] 27 [to 35], wherein the [microbial] activated spores [used] are activated by [one or a combination of the following] treatments selected from the group consisting of [:

- (a)] cycles of wetting and/or drying,
- [- (b)] addition of nutritional supplies or addition of spore elements,
- [- (c)] exposure to temperature changes[, preferably] within a range of about 0° to about 80°C, and
- [- (d)] exposure to changes in pH[, preferably] within a pH range of about 2.0 to about 8.0 [more preferably between 3.0 and 6.0] to obtain spores where [significantly more swollen than their dormant size, more particularly,] the size of the spores is increased by a factor [preferably] between about 1.2 and about 10 over their dormant size and/or the spores [with] have one or more germ tubes per spore, and mixtures thereof.

36. (Once Amended) A [P]process according to [any one of] claim[s] 27 [to 35], wherein the pH during the steeping step is adjusted to a value between about 4.0 and about 6.0.

#### REMARKS

In response to the office action claims 10-12, 25, 26 and 37-42 have been cancelled without prejudice to reasserting such claims in a divisional application. Claims 1, 2, 4, 7, 8, 27, 29, 32, 33, 34, 35 and 36 have been amended. Claims 1-9, 13-24 and 27-36 are pending.

#### The Pending Claims Are Not Anticipated By And Are Nonobvious In View Of Gyllang et al.

The Gyllang et al. reference does not describe adding activated spores to barley. The Examiner assumed that the Gyllang et al. reference did add activated spores to a barley cereal, but invited applicants to indicate otherwise. Indeed, applicants have made spores precisely the way the reference describes how its authors cultivated spores. Applicants found that after such cultivation and homogenation the resulting spores were not activated. Hence, Gyllang et al. does not mix activated spores with a cereal as claimed.

The Amended Claims Obviate The Section 112 Rejections Of Paragraphs 8 through 13.

Responsive to paragraph 10, claim 35 has been amended to remove the phrase "significantly more swollen than their dormant size."

Responsive to paragraphs 7 and 11, the Markush language of claims 29 and 31 have been amended. This should obviate the rejection of claims 29 and 31.

Also responsive to paragraph 11, claims 27 ("preferably" removed), 32("preferentially" removed), 33("such as" removed), 34("preferably" removed) and 35("preferably" removed) have been amended to obviate the section 112 rejection.

Claims 35 Through 36 Have Been Amended To Correct For Multiple Dependency.

ATCC 4858, 9363 and 14156 Are Publicly Available.

The Priority Document And Formal Drawing Will Be Filed Once Allowable Subject Matter Is Found.

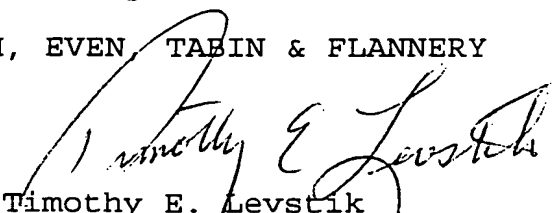
Conclusion.

Applicants respectfully submit that Gyllang et al. do not describe or even suggest the addition or mixing of activated spores to a cereal for enhanced enzymatic activity. In view of the foregoing reconsideration and allowance is respectfully requested.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By:

  
Timothy E. Levstik  
Registration No. 30,192

Date: June 18, 1999

Fitch, Even, Tabin & Flannery  
120 So. LaSalle Street, S/1600  
Chicago, IL 60603-3406  
Phone: 312/577-7000  
Fax: 312/577-7007

**DRAFT**

*for Noon Interview*  
PATENT  
ATTORNEY DOCKET  
NO. 61944

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Coppens et al.

Serial No.: 08/898,736

Filed: July 23, 1997

Title: PROCESS FOR THE PREPARATION  
OF MALTED CEREALS

Group Art Unit: 1761

Examiner: C. Sherrer

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on this date.

Date \_\_\_\_\_ Registration No. \_\_\_\_\_  
Attorney for Applicant(s) \_\_\_\_\_

AMENDMENT B

Honorable Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Dear Sir:

To supplement Amendment A in this application,  
please amend the application as follows.

IN THE CLAIMS

Please add the following claims.

43. A method for the preparation of a malted cereal product, the method comprising:

mixing activated spores with a cereal to provide a malting cereal composition, wherein said activated spores increase an activity of an enzyme that is present in a cereal used during said malting process and the activated spores are present in the malting cereal composition in an amount which is effective for providing the malted cereal with an enzyme activity which is greater than the enzyme activity which is obtained by a malting process without activated spores.

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*13*

44. The method as recited in claim 43, wherein said enzyme is selected from the group of  $\beta$ -glucanase, xylanase, amylase, Protease, naturally occurring enzymes in the cereal and combinations thereof.

45. A method as recited in claim 44 wherein the activated spores are from the microbes selected from the group consisting of *Micrococcus* spp., *Streptococcus* spp., *Leuconostoc* spp., *Pediococcus* spp., *Pediococcus halophilus*, *Pediococcus cerevisiae*, *Pediococcus damnosus*, *Pediococcus hemophilus*, *Pediococcus parvulus*, *Pediococcus soya*, *Lactococcus* spp., *Lactobacillus* spp., *Lactobacillus acidophilus*, *Lactobacillus amylovorus*, *Lactobacillus bavaricus*, *Lactobacillus bifementans*, *Lactobacillus brevis* var *lindneri*, *Lactobacillus casei* var *casei*, *Lactobacillus delbrueckii*, *Lactobacillus delbrueckii* var *lactis*, *Lactobacillus delbrueckii* var *bulgaricus*, *Lactobacillus fermenti*, *Lactobacillus gasserii*, *Lactobacillus helveticus*, *Lactobacillus hilgardii*, *Lactobacillus renterii*, *Lactobacillus sake*, *Lactobacillus sativorus*, *Lactobacillus cremoris*, *Lactobacillus kefir*, *Lactobacillus pentoceticus*, *Lactobacillus cellobiosus*, *Lactobacillus bruxellensis*, *Lactobacillus buchnerii*, *Lactobacillus coryneformis*, *Lactobacillus confusus*, *Lactobacillus florentinus*, *Lactobacillus viridescens*, *Corynebacterium* spp., *Propionibacterium* spp., *Bifidobacterium* spp., *Streptomyces* spp., *Bacillus* spp., *Sporolactobacillus* spp., *Acetobacter* spp., *Agrobacterium* spp., *Alcaligenes* spp., *Pseudomonas* spp., *Pseudomonas amylophilia*, *Pseudomonas aeruginosa*, *Pseudomonas cocovenenans*, *Pseudomonas mexicana*, *Pseudomonas pseudomallei*, *Gluconobacter* spp., *Enterobacter* spp., *Erwinia* spp., *Klebsiella* spp., *Proteus* spp., *Ascomycota*, *Dothideales*, *Mycosphaerellaceae*, *Mycosphaerella* spp., *Venturiaceae*, *Venturia* spp., *Eurotiales*, *Monascaceae*, *Monascus* spp., *Trichocomaceae*, *Emericilla* spp., *Euroteum* spp., *Eupenicillium* spp., *Neosartorya* spp., *Talaromyces* spp., *Hypocreales*, *Hypocreaceae*, *Hypocrea* spp., *Saccharomycetales*, *Dipodascaceae*, *Dipodascus* spp., *Galactomyces* spp., *Endomycetaceae*, *Endomyces* spp., *Metschnikowiaceae*, *Guilliermondella* spp., *Saccharomycetaceae*, *Debaryomyces* spp., *Dekkera* spp., *Pichia* spp., *Kluyveromyces* spp., *Saccharomyces* spp., *Torulaspora* spp., *Zygosaccharomyces* spp., *Saccharomycodaceae*, *Hanseniaspora* spp.; *Schizosaccharomycetales*, *Schizosaccharomycetaceae*,

Schizosaccharomyces spp., Sordariales, Chaetomiaceae,  
 Chaetomium spp., Sordariaceae, Neurospora spp., Zygomycota,  
 Mucorales, Mucoraceae, Absidia spp., Amylomyces spp.,  
 Rhizomucor spp., Actinomucor spp., Thermomucor spp.,  
 Chlamydomucor spp., Mucor spp., Mucor circinelloides, Mucor  
 grisecyanus, Mucor hiemalis, Mucor indicus, Mucor mucedo,  
 Mucor piriformis, Mucor plumbeus, Mucor praini, Mucor  
 pusillus, Mucor silvaticus, Mucor javanicus, Mucor racemosus,  
 Mucor rouxianus, Mucor rouxii, Mucor aromaticus, Mucor flavus,  
 Mucor miehei, Rhizopus spp., Rhizopus arrhizus, Rhizopus  
 oligosporus, Rhizopus oryzae, Rhizopus oryzae strain ATCC  
 4858, Rhizopus oryzae strain ATCC 9363, Rhizopus oryzae strain  
 NRRL 1891, Rhizopus oryzae strain NRRL 1472, Rhizopus  
 stolonifer, Rhizopus thailandensis, Rhizopus formosaensis,  
 Rhizopus chinensis, Rhizopus cohnii, Rhizopus japonicus,  
 Rhizopus nodosus, Rhizopus delemar, Rhizopus acetorinus,  
 Rhizopus chlamydosporus, Rhizopus circinans, Rhizopus  
 javanicus, Rhizopus peka, Rhizopus saito, Rhizopus tritici,  
 Rhizopus niveus, Rhizopus microsporus, Mitosporic fungi,  
 Aureobasidium spp., Acremonium spp., Cercospora spp.,  
 Epicoccum spp., Monilia spp., Monilia candida, Monilia  
 sitophila, Mycoderma spp., Candida spp., Candida diddensiae,  
 Candida edax, Candida etchellsii, Candida kefir, Candida  
 krisei, Candida lactosa, Candida lambica, Candida melinii,  
 Candida utilis, Candida milleri, Candida mycoderma, Candida  
 parapsilosis, Candida obtux, Candida tropicalis, Candida  
 valida, Candida versatilis, Candida guilliermondii,  
 Rhodotorula spp., Torulopsis spp., Geotrichum spp., Geotrichum  
 amycelium, Geotrichum armillariae, Geotrichum asteroides,  
 Geotrichum bipunctatum, Geotrichum dulcitum, Geotrichum  
 eriense, Geotrichum fici, Geotrichum flavo-brunneum,  
 Geotrichum fragrans, Geotrichum gracile, Geotrichum heritum,  
 Geotrichum klebaknii, Geotrichum penicillatum, Geotrichum  
 hirtum, Geotrichum pseudocandidum, Geotrichum rectangulatum,  
 Geotrichum suaveolens, Geotrichum vanryiae, Geotrichum  
 loubieri, Geotrichum microsporum, Cladosporium spp.,  
 Trichoderma spp., Trichoderma hamatum, Trichoderma harzianum,  
 Trichoderma koningii, Trichoderma pseudokoningii, Trichoderma

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reesei, Trichoderma virgatum, Trichoderma viride, Oidium spp., Alternaria spp., Alternaria alternata, Alternaria tenuis, Helminthosporium spp., Helminthosporium gramineum, Helminthosporium sativum, Helminthosporium teres, Aspergillus spp., Aspergillus ochraseus, Aspergillus nidulans, Aspergillus versicolor, Aspergillus wentii Group, Aspergillus candidus, Aspergillus flavus, Aspergillus niger, Aspergillus oryzae strain ATCC 14156, Penicillium spp., Penicillium aculeatum, Penicillium citrinum, Penicillium claviforme, Penicillium funiculosum, Penicillium italicum, Penicillium lanoso-viride, Penicillium emersonii, Penicillium lilacinum, Penicillium expansum and mixtures thereof.

46. A method for the preparation of a malted cereal, the method comprising:

mixing activated spores with a cereal to provide a malting cereal composition, the activated spores comprising at least about  $1 \times 10^2$  of the malting cereal composition.

*gram 91r*

47. A method as recited in claim 46 wherein the activated spores are from the microbes selected from the group consisting of Micrococcus spp., Streptococcus spp., Leuconostoc spp., Pediococcus spp., Pediococcus halophilus, Pediococcus cerevisiae, Pediococcus damnosus, Pediococcus hemophilus, Pediococcus parvulus, Pediococcus soyaе, Lactococcus spp., Lactobacillus spp., Lactobacillus acidophilus, Lactobacillus amylovorus, Lactobacillus bavaricus, Lactobacillus bifermētans, Lactobacillus brevis var lindneri, Lactobacillus casei var casei, Lactobacillus delbrueckii, Lactobacillus delbrueckii var lactis, Lactobacillus delbrueckii var bulgaricus, Lactobacillus fermenti, Lactobacillus gasserii, Lactobacillus helveticus, Lactobacillus hilgardii, Lactobacillus renterii, Lactobacillus sake, Lactobacillus sativorus, Lactobacillus cremoris, Lactobacillus kefir, Lactobacillus pentoceticus, Lactobacillus cellobiosus, Lactobacillus bruxellensis, Lactobacillus buchnerii, Lactobacillus coryneformis, Lactobacillus confusus,

*Lactobacillus florentinus*, *Lactobacillus viridescens*,  
*Corynebacterium* spp., *Propionibacterium* spp., *Bifidobacterium*  
spp., *Streptomyces* spp., *Bacillus* spp., *Sporolactobacillus*  
spp., *Acetobacter* spp., *Agrobacterium* spp., *Alcaligenes* spp.,  
*Pseudomonas* spp., *Pseudomonas amylophilia*, *Pseudomonas*  
*aeruginosa*, *Pseudomonas cocovenenans*, *Pseudomonas mexicana*,  
*Pseudomonas pseudomallei*, *Gluconobacter* spp., *Enterobacter*  
spp., *Erwinia* spp., *Klebsiella* spp., *Proteus* spp., Ascomycota,  
Dothideales, *Mycosphaerellaceae*, *Mycosphaerella* spp.,  
*Venturiaceae*, *Venturia* spp., Eurotiales, *Monascaceae*,  
*Monascus* spp., *Trichocomaceae*, *Emericilla* spp., *Eurotium* spp.,  
*Eupenicillium* spp., *Neosartorya* spp., *Talaromyces* spp.,  
Hypocreales, *Hypocreaceae*, *Hypocrea* spp., *Saccharomycetales*,  
*Dipodascaceae*, *Dipodascus* spp., *Galactomyces* spp.,  
*Endomycetaceae*, *Endomyces* spp., *Metschnikowiaceae*,  
*Guilliermondella* spp., *Saccharomycetaceae*, *Debaryomyces* spp.,  
*Dekkera* spp., *Pichia* spp., *Kluyveromyces* spp., *Saccharomyces*  
spp., *Torulaspora* spp., *Zygosaccharomyces* spp.,  
*Saccharomycodaceae*, *Hanseniaspora* spp.;  
Schizosaccharomycetales, *Schizosaccharomycetaceae*,  
*Schizosaccharomyces* spp., Sordariales, *Chaetomiaceae*,  
*Chaetomium* spp., *Sordariaceae*, *Neurospora* spp., Zygomycota,  
Mucorales, *Mucoraceae*, *Absidia* spp., *Amylomyces* spp.,  
*Rhizomucor* spp., *Actinomucor* spp., *Thermomucor* spp.,  
*Chlamydomucor* spp., *Mucor* spp., *Mucor circinelloides*, *Mucor*  
*grisecyanus*, *Mucor hiemalis*, *Mucor indicus*, *Mucor mucedo*,  
*Mucor piriformis*, *Mucor plumbeus*, *Mucor praini*, *Mucor*  
*pusillus*, *Mucor silvaticus*, *Mucor javanicus*, *Mucor racemosus*,  
*Mucor rouxianus*, *Mucor rouxii*, *Mucor aromaticus*, *Mucor flavus*,  
*Mucor miehei*, *Rhizopus* spp., *Rhizopus arrhizus*, *Rhizopus*  
*oligosporus*, *Rhizopus oryzae*, *Rhizopus oryzae* strain ATCC  
4858, *Rhizopus oryzae* strain ATCC 9363, *Rhizopus oryzae* strain  
NRRL 1891, *Rhizopus oryzae* strain NRRL 1472, *Rhizopus*  
*stolonifer*, *Rhizopus thailandensis*, *Rhizopus formosaensis*,  
*Rhizopus chinensis*, *Rhizopus cohnii*, *Rhizopus japonicus*,  
*Rhizopus nodosus*, *Rhizopus delemar*, *Rhizopus acetorinus*,  
*Rhizopus chlamydosporus*, *Rhizopus circinans*, *Rhizopus*  
*javanicus*, *Rhizopus peka*, *Rhizopus saito*, *Rhizopus tritici*,

Rhizopus niveus, Rhizopus microsporus, Mitosporic fungi, Aureobasidium spp., Acremonium spp., Cercospora spp., Epicoccum spp., Monilia spp., Monilia candida, Monilia sitophila, Mycoderma spp., Candida spp., Candida diddensiae, Candida edax, Candida etchellsii, Candida kefir, Candida krisei, Candida lactosa, Candida lambica, Candida melinii, Candida utilis, Candida milleri, Candida mycoderma, Candida parapsilosis, Candida obtux, Candida tropicalis, Candida valida, Candida versatilis, Candida guilliermondii, Rhodotorula spp., Torulopsis spp., Geotrichum spp., Geotrichum amycelium, Geotrichum armillariae, Geotrichum asteroides, Geotrichum bipunctatum, Geotrichum dulcitum, Geotrichum eriense, Geotrichum fici, Geotrichum flavo-brunneum, Geotrichum fragrans, Geotrichum gracile, Geotrichum heritum, Geotrichum klebaknii, Geotrichum penicillatum, Geotrichum hirtum, Geotrichum pseudocandidum, Geotrichum rectangulatum, Geotrichum suaveolens, Geotrichum vanryiae, Geotrichum loubieri, Geotrichum microsporum, Cladosporium spp., Trichoderma spp., Trichoderma hamatum, Trichoderma harzianum, Trichoderma koningii, Trichoderma pseudokoningii, Trichoderma reesei, Trichoderma virgatum, Trichoderma viride, Oidium spp., Alternaria spp., Alternaria alternata, Alternaria tenuis, Helminthosporium spp., Helminthosporium gramineum, Helminthosporium sativum, Helminthosporium teres, Aspergillus spp., Aspergillus ochraseus, Aspergillus nidulans, Aspergillus

versicolor, Aspergillus wentii Group, Aspergillus candidus, Aspergillus flavus, Aspergillus niger, Aspergillus oryzae strain ATCC 14156, Penicillium spp., Penicillium aculeatum, Penicillium citrinum, Penicillium claviforme, Penicillium funiculosum, Penicillium italicum, Penicillium lanoso-viride, Penicillium emersonii, Penicillium lilacinum, Penicillium expansum and mixtures thereof.

Respectfully submitted,

FITCH, EVEN, TABIN & FLANNERY

By:

Timothy E. Levstik  
Registration No. 30,192

Date: \_\_\_\_\_

Fitch, Even, Tabin & Flannery  
120 So. LaSalle Street, S/1600  
Chicago, IL 60603-3406  
Phone: 312/577-7000

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ATTORNEY DOCKET  
NO. 61944

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3. Preparation of Spore Suspension. *Rhizopus oryzae* ATCC 9363, *Aspergillus fumigatus* CBS 148.89, and *Aspergillus amstelodami* VTT D-76035 were each grown in a tissue culture flask containing 225 ml of 2% peptone (w/v, Unipath, Hampshire, United Kingdom), 1% yeast extract (w/v, Unipath, Hampshire, United Kingdom), and 2% dextrose (w/v, VEL, Leuven, Belgium) medium without agar (pH=ca. 6.4)<sup>1</sup>. After incubation for 3 weeks at 20°C the spores were homogenized by vigorous shaking.

4. Spore Analysis. The spores in the homogenate were observed microscopically at 0 time under the procedure of Gyllang et al. Further, although it would not be contemplated by the procure of Gyllang et al., some spores in the homogenate were observed microscopically after 6 hours of incubation at 20°C or 42°C. Results were as follows.

<u>Microorganism</u>	20°C		42°C	
	<u>0 Time</u>	<u>6 hours</u>	<u>0 Time</u>	<u>6 hours</u>
<i>Rhizopus oryzae</i>	0	0	0	0
<i>Aspergillus fumigatus</i>	0	0	0	0
<i>Aspergillus amstelodami</i>	0	3	0	0

The 3% value for *Aspergillus amstelodami* at 20°C for 6 hours is within experimental error and is not statistically significantly different from zero. Hence, the medium and growth conditions described in Gyllang et al. did not provide activated spores.

<sup>1</sup>The composition of the medium is further described by Kaiser et al., *Methods in Yeast Genetics*, Appendix A, p. 207, Cold Spring Harbor Laboratory Press, New York, USA, 1994.

The undersigned, being warned that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. §1001) and may jeopardize the validity of the application or any patent issuing thereon, hereby declares that the above statements made of my own knowledge are true and that all statements made on information and belief are believed to be true.

Date: \_\_\_\_\_

Theo Coppens